

ON THE IDENTITY OF *ECHIMYS DIDELPHOIDES*
DESMAREST, 1817
(MAMMALIA: RODENTIA: ECHIMYIDAE)

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Abstract.—Two early names for species of the genus *Echymys* (*Makalata*), *E. didelphoides* and *Loncheres obscura*, were erroneously assigned to the genus *Mesomys* by Tate (1935). One of these, *didelphoides*, is the oldest name for the red-nosed tree rats currently known as *Makalata armata*.

While revising the genera of arboreal echimyids I have encountered chronic errors in the literature that I wish to correct without awaiting completion of systematic studies.

Taxonomic History

Desmarest (1817:55) described *Echymys didelphoides*, attributing the name to E. Geoffroy St.-Hilaire. The description is brief, and includes the comment that the tail is furred for a portion of its base and naked distally. Regrettably, Desmarest named the species for the resemblance of the tail to those of didelphid opossums, whose tails are also naked but densely furred at the base. The description of *E. didelphoides* immediately follows that of *Echymys hispidus*, on the same page. The latter also is described as possessing a naked, scaly tail. Lichtenstein (1830) described and illustrated a specimen he identified as *Mus hispidus* Desmarest, 1817, said by a dealer to have come from Cayenne. Cuvier (1832: Plate 18, fig. 2) illustrated the teeth of *E. didelphoides*.

Geoffroy St.-Hilaire (1838) noted that Lichtenstein's specimen was misidentified, and, without seeing the specimen, renamed it *Nelomys armatus*. In his complete revision of the echimyid rodents, Geoffroy St.-Hilaire (1840) explained that *armatus* resembled *didelphoides* except in details of color, length of the haired part of the tail, tail length, and width of the spines (p. 11),

but he later noted that the type of *didelphoides* was a young individual that had been preserved in alcohol and it would be larger as an adult and its original color could not be known with certainty (p. 43). He said that his father (E. Geoffroy St.-Hilaire) had acquired it in Lisbon and, although it lacked a locality, it probably came from Brazil. It is illustrated with a fine color plate (I. Geoffroy St.-Hilaire 1940: plate 24).

Wagner (1843) commented that *Echymys didelphoides* was closely related to *Loncheres armata*: Wagner, 1843, and perhaps simply a young one. Waterhouse (1848) said the differences between the two did not seem to warrant their separation.

Tate (1935) without seeing the specimens, placed *didelphoides* in the genus *Mesomys*, where it has remained since (e.g., Cabrera 1960, Honacki et al. 1982, Corbet & Hill 1991). At the same time, Tate (1935) also placed *Loncheres obscura* Wagner, 1840, in the genus *Mesomys*.

Husson (1978) erected a new genus, *Makalata*, with I. Geoffroy St.-Hilaire's *armata* (Lichtenstein's *Mus hispidus*) as its type.

Identity of the Holotype of *Echymys didelphoides*

Tate (1935) based his decision to include *didelphoides* in *Mesomys* on the color plate in Geoffroy St.-Hilaire (1840). Because the teeth illustrated by Cuvier (1832) are not

those of a *Mesomys*, he assumed that specimens had been mixed up and the wrong one illustrated.

I examined the holotype, Museum National d'Histoire Naturelle, Paris (MNHN) No. 404, 1805 (lot de montage). It is a mounted specimen on a wooden base, on the bottom of which is written, "Type de I. Geoffroy père et fils Nelomys didelphoïdes Is Geoff. (T) Echimys didelphoïde Geoff. St. N(T) Amerique du Sud." The specimen was on display in the Grande Gallerie for over a century and is severely darkened. The skull has been lost, but fortunately, before its loss, the teeth were illustrated by Cuvier (1832: Plate 18, fig. 2). The teeth are those of a young animal, with the third molar not yet erupted through the gumline.

The holotype of *Echimys didelphoides* is a young *Makalata armata* as currently defined. All evidence from the period literature, including the color plate (Geoffroy St.-Hilaire 1840), the teeth (Cuvier 1832), and all original descriptions based on the type conform exactly to MNHN 404, and there is no evidence that a specimen mixup occurred.

The holotype of *E. hispidus*, MNHN 407, is a mounted specimen on a wooden base with "*Echimys hispidus* Geoffro. St. H. (T) Type de l'espèce" written below. The skull attributed to this specimen has an attached label from the British Museum (BMNH), with, in Oldfield Thomas' handwriting, "*Mesomys hispidus* type of "*E. hispidus*." This specimen is a *Mesomys* and it is also shown accurately in a quaint but unambiguous color plate in Geoffroy St.-Hilaire (1840).

Echimys didelphoides Desmarest 1817, therefore, antedates *Echimys armatus* Geoffroy St.-Hilaire, 1838 (based on Lichtenstein 1830). Tate (1935) simply erred in treating *didelphoides* as a *Mesomys*.

Echimys didelphoides clearly belongs to a group that is almost certainly polytypic (Emmons & Feer 1990 and Emmons, unpublished results) and contains a number of other named and perhaps unnamed forms

that are not currently recognized (Cabrera 1960, Honaki et al. 1982). It is therefore important to determine whether *E. didelphoides* can be attributed to any geographic subset or form of the red-nosed tree rats. The skin of the holotype does not correspond in diagnostic traits to either *E. occasius* Thomas, 1921 or *E. rhipidurus* Thomas, 1928 as redescribed by Emmons and Feer (1990), and the teeth are also distinct from the latter. The specimen does agree in characters with a group of forms like *armata*.

The skin of the holotype of *didelphoides* was described and illustrated as having a pale venter sharply differentiated from the sides, and does so now. The type of *armata* was also described as having a completely cream or buff venter ("Isabellfarbe," Lichtenstein 1830). This character is rare in red-nosed rats, it is found in the holotype of *Echimys guianae* Thomas, 1888, from Guyana, and also in a few (but not all) specimens from south of the Amazon in the Brazilian states of Maranhão and Pará, from the rio Xingu to the Atlantic coast east of Belém. Most other populations have exclusively gray-brown venters. However, the hair pigments of echimyids bleach easily and Venezuelan specimens stored in alcohol in the National Museum of Natural History, Washington (USNM), have in 20 years lost much color and their venters are now dirty yellowish, while skins from the same collections are dark gray-brown. Because the holotype of *didelphoides* was originally in alcohol, its pale ventral color should not be given too much emphasis.

All juveniles of spiny arboreal echimyids lack spines, which get gradually heavier with age. Compared to *armatus*, the narrower, smaller spines in *didelphoides*, a chief character used by Geoffroy St.-Hilaire (1840) to separate *armatus* from it, therefore has little value.

Among other characters, Husson (1978) used direction of upper toothfold opening (lingual or labial) to distinguish *Makalata* from *Echimys*. Because he apparently only

examined red-nosed tree rats from Suriname, he failed to realize that this character is extremely variable. Individuals within populations can have different states of toothfold pattern, although the within-population variation is much less than that found between populations. The cheekteeth of *E. didelphoides* illustrated by Cuvier (1832) have all folds opening labially on the first two cheekteeth, with the posterior folds opening lingually in the third and fourth teeth, which matches the pattern often seen in specimens from Venezuela and also that of an animal from near Belém (USNM 460069). Others from Pará, the holotype of *E. guianae*, and specimens from Suriname (Husson 1978) usually have the posterior fold opening labially in all four cheekteeth. Both the toothfold patterns and the shape and proportions of the teeth of *didelphoides* seem to exclude it from populations exemplified by specimens from Perú and from the Amazon Basin west of the rios Negro and Tapajóz. A pale venter would likewise exclude it from these populations.

On current evidence, I assign *E. didelphoides* to the greater Guiana region, as defined by the regional concordance of species of primates and other mammals (Emmons & Feer 1990), including the area north of the Amazon and east of the rio Negro and including the Guianas, and south of the Amazon from the rio Xingu eastward.

The names based on specimens from this region that are junior synonyms of *Echimy*s *didelphoides* are:

Nelomys armatus I. Geoffroy Saint-Hilaire, 1838

Loncheres guianae Thomas, 1888

*Echimy*s *longirostris* Anthony, 1921

*Echimy*s *castaneus* Allen & Chapman, 1893

Identity of *Loncheres obscura*

Wagner (1840) described and figured the skull, limb bones, and teeth of *Loncheres obscura* collected by Spix in Brazil. The description and figures are clearly of an *Echi-*

mys (s.l.). Tate (1935), in an apparent lapsus, placed *obscura* first in the genus *Mesomys* (p. 413), and then in the genus *Echimy*s (p. 432). Subsequent authors (Cabrera 1960, with reservations; Honaki et al. 1982; Corbet & Hill 1991) followed Tate's first allocation, and retained *obscura* in *Mesomys*.

I have not seen the holotype of *L. obscura*. The illustrations of it are crude, but they preclude identity with *Mesomys*, *Nelomys* (Atlantic tree rats), and *E. rhipidurus*. The description ("dunkelbraun") most closely matches dark, almost blackish animals from west of the rio Madeira in Brazil, a region visited by Spix. Two years later, Wagner (1842) described another species, *macrurus*, from Borba (on the east side of the Madeira), as reddish yellow ("fulvescens"). Pending a better identification of *obscurus*, the large red-nosed rats of the central Amazon basin should retain the name *E. macrurus* Wagner.

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Literature Cited

- Cabrera, A. 1960. Catalogo de los Mamiferos de America del Sur. Museo Argentino de Ciencias Naturales "Bernardino Rivadavia."—*Ciencias Zoológicas* 4:538–543.
- Corbet, G. B., & J. E. Hill. 1991. A world list of mammalian species. British Museum, London.
- Cuvier, F. 1832. Description des caractères propres aux genres *Graphiure* et *Cercomys* de l'ordre des rongeurs.—*Nouvelles Annales du Museum d'Histoire Naturelle* 1:449–452, pl. 18 fig. 2.

- Desmarest, A. G. 1817. *Echimys, Echimys*. Tome X. Pp. 54–59 in *Nouveau Dictionnaire d'Histoire Naturelle*, Deterville, Paris, 10:1–591.
- Emmons, L. E., & F. Feer. 1990. Neotropical rain-forest mammals. University of Chicago Press, Chicago, 281 pp.
- Geoffroy Saint-Hilaire, I. 1838. Notice sur les rongeurs épineux désignés par les auteurs sous les noms d'*Echimys*, *Loncheres*, *Heteromys* et *Nelomys*.—*Revue Zoologique* 1:99–101.
- . 1840. Notice sur les rongeurs epineux désignés par les auteurs sous les noms d'*Echimys*, *Loncheres*, *Heteromys* et *Nelomys*.—*Magazin de Zoologie, Série 2*, 2:1–57, pls. 20–29.
- Honaki, J. H., K. E. Kinman, & J. W. Koppl. 1982. Mammal species of the world. Allen Press and Association of Systematics Collections, Lawrence, Kansas, 694 pp.
- Husson, A. M. 1978. The mammals of Suriname. E. J. Brill, Leiden, 569 pp., 151 pls.
- Lichtenstein, M. H. C. 1830. Darstellungen neue oder wenig bekannte Säugethiere. 2 Vols. C. G. Luderitz, Berlin, plate XXXV with text.
- Tate, G. H. H. 1935. The taxonomy of the genera of neotropical hystricoid rodents.—*Bulletin of the American Museum of Natural History* 68:295–447.
- Thomas, O. 1888. On a new species of *Loncheres* from British Guiana.—*Annals and Magazine of Natural History*, Ser. 6, 2(10):326.
- Wagner, J. A. 1840. II. Stachelmäuse. *Abhandlungen (Bayerische) Akademie Wissenschaften*, Munich. Pp. 191–210, plate II.
- . 1842. Diagnosen neuer Arten brasilischer Säugethiere.—*Archiv für Naturgeschichte* 8:356–362.
- . 1843. Die Säugethiere in Abbildungen nach der Natur mit beschreibungen von Dr. Johann Christian Daniel von Schreber. Leipzig. Supplementband Erlangen, Expedition das Schreber'schen Säugthier- und des Esper'sshen Schmetterlingswerkes, und in Commission der Voss'schen Buchhandlung in Leipzig, 3:xiv + 614 pp., pls. 85–165.
- Waterhouse, G. R. 1848. A natural history of the Mammalia. Vol. II. Hippolyte Bailliere, London 2:1–500, 21 pls.

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